ATI TEAS SCIENCE REVIEW
BODILY ORGANS AND SYSTEMS

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THE IMMUNE SYSTEM

The immune system is divided into two categories:

**Innate immunity** refers to the nonspecific response mechanisms that begin immediately or within hours of an antigen's appearance. The innate immune system includes physical barriers such as skin and mucus, chemicals in the blood, and immune system cells that attack foreign cells in the body. The innate immune response is activated by the chemical properties of the antigen.

**Adaptive immunity (acquired)** refers to antigen-specific immune response and is more complex than innate immunity. An antigen first must be processed and recognized as foreign; then the adaptive immune system creates immune cells specifically designed to attack that antigen. Adaptive immunity also provides memory of an antigen that makes future responses to that antigen more efficient.

THE IMMUNE SYSTEM

The immune system is supported by different defense mechanisms in the body that prevent disease and bacterial pathogens from developing in the body. An immune response occurs when the body recognizes these pathogens and creates an action against them. Harmful molecules that are recognized and elicit an immune response are called antigens. In response to antigens, the body makes antibodies to fight off specific antigen cells.

THE IMMUNE SYSTEM

The body’s first line of defense against pathogens includes the skin and various secretions, such as sweat and saliva. If pathogens successfully enter the body, often a fever or inflammation will occur to fight off an infection.

Lymphocytes, special white blood cells, are formed in response to certain antigens. Some examples of lymphocytes include:

- **Natural killer (NK) cells** work against cells infected with bacteria and viruses.
- **T cells** attack body cells infected with pathogens.
- **B cells** produce specific antibodies.

**Active immunity** develops from natural exposure to pathogens and an immune response. It can also be mimicked through vaccinations, where an individual is given a weakened antigen so the body can induce a response and build memory cells.

**Passive immunity** elicits a temporary response when a person is given antibodies produced by another person or animal.
When the immune system is compromised, illness will occur with differing levels of severity. Sometimes the illness that manifests is the common cold, while other pathogens, such as cancer cells, evade immune responses. If the immune system mistakenly targets host cells, this leads to autoimmune disease.